Arsenic in Drinking Water

Washington State Department of Health
Environmental Health Programs
Division of Drinking Water

Questions & Answers

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What is arsenic and where does it come from?
Arsenic is a naturally occurring element in the earth's crust. Arsenic can be released into the environment through natural processes such as volcanic action, erosion of rock, or by human activities such as mining or smelting of arsenic-containing ores, and orchard spraying. It has been used commercially in wood preservatives, agricultural chemicals, and the manufacture of semi-conductors.

How does arsenic get into drinking water?
Most arsenic in drinking water comes from natural rock formations. Water that encounters these rock formations can dissolve arsenic and carry it into underground aquifers, streams, and rivers that may be used as drinking water supplies. Arsenic deposited on the ground from industrial or agricultural uses tends to remain in the top few feet of soil for a long time and is not likely to have a significant impact on most aquifers. When dissolved in water, arsenic has no smell, taste, or color, even at high concentrations.

How can arsenic affect human health?
Arsenic has been reported to cause more than 30 different adverse health effects including cardiovascular disease, diabetes mellitus, skin changes, nervous system damage, and various forms of cancer. The odds that one or more of these could occur depends upon the amount of arsenic a person consumes, and how sensitive they are to the effects of arsenic. Getting arsenic on the skin when bathing or washing is not considered a major contributor to health risk. There is a small chance that some people who drink water containing low levels of arsenic for many years could develop circulatory disease, cancer, or other health problems. Most cancers and circulatory diseases are due to factors other than exposure to arsenic.

Why was the drinking water standard for arsenic tightened?
For many years, the drinking water standard for arsenic was 50 parts per billion (ppb). The federal Environmental Protection Agency (EPA) established the standard to reduce the amount of arsenic allowed in public drinking water supplies. EPA tightened the standard from 50 ppb to 10 ppb in February 2002. The reason EPA tightened the standard was to lessen people's long-term exposure to arsenic in drinking water to reduce the risk of adverse health effects.

Are some parts of Washington more affected than others?
Elevated levels of naturally occurring arsenic are present in some central and northern Puget Sound counties. These levels of arsenic in groundwater are thought to be attributed to geologic formations rather than human activities.

How does the new standard affect water systems?
EPA's standard of 10 ppb balances the current understanding of arsenic's health effects against the costs of removing arsenic from drinking water. Increased safety comes at a cost; the new arsenic standard will be the most costly of new EPA rules to meet. Affected systems may be able to use an alternative source of water, or design and install new water treatment methods to remove arsenic from water. The new drinking water standard becomes effective in January 2006. In the meantime, customers will receive a Consumer Confidence Report from their water utility each year with information on the level of arsenic (if any) detected in their drinking water.

Is my health at risk if I drink water with arsenic higher than the new standard?
Arsenic present in drinking water, soil, air, and food does pose health risks. The more you are exposed to arsenic over time, the higher the risk becomes for experiencing health effects. Different people may have different responses to the same exposure to arsenic, so there is no way to know exactly what may happen in any given case. Reducing the amount of arsenic allowed in drinking water will lessen people's exposure and reduce risk of adverse health effects.

Can water from private wells also be contaminated with arsenic?
Yes, it can. Local health departments can advise people about how to get private well water tested for arsenic and other possible contaminants.

Are there ways to remove arsenic from water at the tap?
Yes. NSF International is an independent non-profit organization that certifies treatment products and methods. Such certification is not a guarantee of safety, but it may help you make decisions. Call 1-800-NSF-MARK or go to their web site at: http://www.nsf.org/

For more information:

Washington State Department of Health:
Drinking Water Southwest Regional Office: 360-664-0768
Drinking Water Northwest Regional Office: 253-395-6750
Drinking Water Eastern Regional Office: 509-456-3115
Drinking Water Data & Source Monitoring: Trace Warner, 360-236-3097
Treatment Technology Options: Sam Perry, 253-395-6755
Arsenic Health Effects: Jim W. White, 360-236-3192

Division of Drinking Water: http://www.doh.wa.gov/ehp/dw
EPA Arsenic Information: http://www.epa.gov/OGWDW/arsenic.html
Agency for Toxic Substances and Disease Registry (U.S. Centers for Disease Control and Prevention): http://www.atsdr.cdc.gov/tfacts2.html

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